



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/521,549

09/23/2005

Michiharu Tanaka

Q85804

9126

65565 7590 01/31/2007
SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

EXAMINER

HORN, ROBERT WAYNE

ART UNIT

PAPER NUMBER

2837

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/521,549

Applicant(s)

TANAKA ET AL.

Examiner

Robert W. Horn

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005 and 12 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-44 is/are pending in the application.
- 4a) Of the above claim(s) 16-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>20070124</u> . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Corrective Action

The examiner is filing this action to correct the actions dated 9/13/2006 requiring an election of a species and of 1/8/2006, the non-final action on the elected species 1 tied to embodiment 1 and linked to figures 1 and 2. The two actions did not take into consideration the preliminary amendments by the applicant dated 1/18/2005 that canceled the original claims 1-13 and replaced them with claims 14-44.

The applicant's representative called to request the correction and to maintain the same elected species, based on the replacement claims filed with the preliminary amendments. By phone on 1/23/2007 the representative identified claim 14 and its dependent claims as drawn to species 1, and requested a non-final action based on the elected species.

The action below replaces the action mailed 1/8/2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 2837

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. (U.S. Patent 4,648,783), Kimura et al. (U.S. Patent 7,047,107 as reference to PCT publication WO 02/066210, 8/29/2002), and Dunbar et al. (U.S. Patent 4,795,998).

Regarding claim 14, Tan et al. teaches a robot control apparatus equipped with a pendant (control item shown at corner of table) to be manipulated by a teacher (man, figure 2), for controlling the operation of a robot on the basis of an operation command from the pendant, comprising:

a detecting device (pad , figure 2, item 14) for detecting the position of the teacher;

a signal processing unit for receiving a signal from the detecting device to produce the position information of the teacher (robot controller, 12 or computer 20).

Tan et al. does not teach a speed limiting operation with respect to the detection of the person in the vicinity of the robot, but safety switches and a safety pad to assure the safety of the person working near the robot arm (abstract, background).

The safety mat of Tan et al. is described only an on/off generating sensor that does not provide positional data with respect to spatial location in the vicinity of the robot in the vicinity of the robot's operating reach.

Kimura et al. teaches a speed controlling operation with respect to an operator safely working near the operation of the robot (column 2, lines 17-25) and

a limited speed selecting unit for selecting the operating speed of the robot on the basis of the position information (figure 1, items 26 and 27), wherein

the robot 1 is controlled at the maximum operating speed selected by the limited speed selecting unit on the basis of the operation command from the pendant 3.

Kimura et al. teaches considering the speed of the end effector and joint parts, so the safety of the teaching operator can be ensured and the teaching operations can be performed efficiently (column 3, lines 36-43). The system described by Kimura et al. keeps the robot arm from moving suddenly, when the operator is in the vicinity of the robot and is motivated to ensure the safety of the operator (column 2, line 25).

Dunbar et al. teaches a safety mat featuring what the safety mat of Tan et al. lacks, a mat including sensor array (figure 6) to provide positional and pressure feedback to the robot (column 6, line 60 to column 7, line 20) and a suggestion to use the mat to detect people (column 6, line 64) and to provide vision to the robot (column 7, lines 19-20.)

Tan et al. and Kimura et al. both teach with respect to the problem solving area of teaching a robot while in close proximity to the device and subject to injury by the unintended motion of the robot. Dunbar et al. teaches a sensing means for providing positional data information to a robot. The ordinary skill in the art is high in respect to robotic controls, sensors and safety operations.

Considering the objective evidence, it would have been obvious to someone of ordinary skill in the art of robotics, to combine the limitations of Tan et al. with regard to sensing an operator in the proximity of the robot, with the limitations of Kimura et al. on

a velocity limiting operation while a person is working in the vicinity of the robot, motivated to ensure the safety of the operator, with the limitations of the safety mat of Dunbar et al., teaching a positional sensing device and the linking of the detection with the control operation of the robot, motivated for detecting people and to provide a vision system to the robot.

Regarding claim 15, Tan et al., Kimura et al. and Dunbar et al. teach a robot control apparatus according to claim 14, and Dunbar et al. teaches the limitations wherein the operation of the robot is stopped by making the operation command to each the axis zero, or interrupting driving energy to the robot (column 3, lines 38-45).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner points to the references cited in the form 892. The examiner advises the applicant review these references, because the examiner may apply the references in future actions, if necessitated by amendment.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Horn whose telephone number is 571-272-8591. The examiner can normally be reached on Monday-Friday 7:00-3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln D. Donovan can be reached on 571-272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2837

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

rwh
January 24, 2007


LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER